

Application No. 10/798,202  
GAU 1733  
Filed 03/08/2006

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### REMARKS

Claims 1 through 15 have been withdrawn. Claims 16 and 20 have been amended. Claims 21 through 29 have been withdrawn. Claims 30 through 33 have been amended. Claim 34 has been withdrawn. Claims 35 through 44 have been cancelled. Claims 45 through 49 have previously been presented.

The Examiner has rejected claims 16 through 20 under 35 USC 103(a) as being unpatentable over Kamiyama (JP 6-320624) and in view of Nimke (GB 2,181,507). It is the Applicant's position that Kamiyama discloses a method of installing grout through a pipe to a pipe system distinct from the Applicant's method of injecting chemical reactants from the ground surface into the ground. Reference is made to Figures 1, 2, and 3 of Kamiyama. These drawings show a quantity of grout encased within tube object and moved through a lateral pipe using fluid pressure. At some point the tube object inverts and the grout is pressed through openings of the pipe. In contrast, comparison is made to Figure 16 and 16A and to Figure 17E of the Applicant's invention and showing the chemical reactant being injected into the ground from the surface (and not utilizing the pipe system).

Claim 16 of the Applicant's application states in part: "injecting from the ground at least one chemical reactant to form a reaction product." Claim 20 states: "The method of claim 16 wherein the radial expansion of the expandable support minimizes the infiltration of the chemical reactant injected from the ground surface or reaction product into the pipe."

It is the Applicant's position that there is no motivation, suggestion or teaching with Kamiyama or Nimke regarding the injection of chemical reactants from the ground surface.

In regard to claims 31, 32, 33, 45, and 46 each claim is dependent upon claim 30. Claim 30 includes in its relevant part the step comprising "injecting a chemical reactant into the ground from the ground surface to form a reaction product; ... ."

Claims 30 through 32 and 46 through 49 have been rejected by the Examiner under 35 U.S.C. 103(a) as unpatentable over Kamiyama and further in view of Strand (US 4,768,562) and Nimke. Claim 33 has been rejected under 35 U.S.C. 103(a) as

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being unpatentable over Kamiyama, Strand, and Nimke as applied in claim 30 and further in view of either one of JP 1-221222 or JP 04147834.

Note Independent claim 47 includes in its relevant part the step of "injecting a chemical reactant into the ground to form a reaction product: ... ."

The Examiner has stated Kamiyama "discloses a pipe rehabilitation method comprising applying liners 4 and 5 and injecting a chemical reactant or foam grout 3 into the ground (Paragraphs 10 and 11)

As justification for the Examiner's position, reference is made to paragraphs 1- and 11. Using the machine translation provided by the Examiner, the relevant text states [10] "this invention approach is an approach of pouring the grout material 3 into the joint of the mains branches from this main 1, and the tubing liners 4 and 5 are lined by the inner skin of a main 1 and a branch pipe 2 with the well-known duct repair method of construction, respectively."

[11] "In addition, the grout material 3 is hardened matter which touches water with, and the mixture of the mixture of hydrophilic polyurethane resin, cement milk, hydrophilic polyurethane resin, and thermosetting resin, silicone resin, isobutylene isoprene rubber, acrylamide, acrylamide, and thermosetting resin etc. is contained in this."

Perhaps additional clarity is disclosed in paragraph 6 stating "In the approach this invention pours grout material into the joint of a main and a branch pipe that the above-mentioned purpose should be attained. After infiltrating grout material into the grout material impregnation liner which covers the peripheral face of a tubular non woven fabric with an airtight high film, and changes, Reverse and insert this grout material impregnation liner into a branch pipe with fluid pressure, and this is advanced to the joint of a main and branch pipe. After making the grout material which raises the internal pressure of the grout material impregnation liner with the condition and which sank into this liner flow out, pouring this into the joint of a main and a branch pipe and this grout material's hardening, it is characterized [the] by sampling a grout material impregnation liner from a branch pipe. (emphasis added)

The grout material impregnation liner is illustrated in Figure 1 and 2 (Reference paragraph 16).

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Paragraph 18 explains that if the grout pressure is raised while in the position of Figure 3, the grout material will flow out of the liner (12) with pressure and the grout material is extruded out of the liner and be injected into areas "a" and "b" illustrated in Figure 4 near the juncture of the main 1 and branch pipe 2.

Note the Kamiyama patent discloses a method of injecting grout from within a pipe into the juncture of the branch and main pipe. Of course, the Applicants invention is not limited to placement of chemical reactants proximate to a pipe interface. Kamiyama does not read upon the claims of the Applicant's application.

What is also key is that drawings 1 through 3 (referenced within the paragraphs cited by the Examiner) disclose the grout being *conveyed through a branch pipe* and, utilizing pressure, being forced through cracks existing at the juncture of a main pipe and branch pipe. *The grout is forced from the inside of the pipe to the outside ground.* The grout is forced around an apparent preinstalled liner 5. The liner is apparently installed in a separate step.

This is not the Applicant's invention. Indeed, one of the objects of the Applicant's invention is minimizing the infiltration of reaction product *into* the pipe. This is accomplished by placement of tensioned structure within the pipe annulus. The Applicant injects the reactant from the ground surface to an area proximate to the pipe outer surface.

Figures 3A, 4B, 17B, 17C and 17D of the Applicant's invention clearly illustrate injection of a reactant *from the ground surface* to an area proximate (but exterior) to an underground pipe. The text of the Applicant's invention states at page 8, beginning at line 20:

"Figure 3A is a schematic illustration across the longitudinal axis 350 wherein closed cell foam 600 is *injected from the ground surface* 105 through the injection mechanism 650 into the void 150 within the ground 100 adjacent to the damaged sewer pipe wall 250." (emphasis added).

Also Kamiyama does not teach using heat to form a reaction product. The other references cited by the Examiner do not teach or suggest radiating heat through a pipe

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to cure a reactant or form a reactant product injected from the ground surface to the ground surrounding the pipe.

The law is clear that all of the claim limitations must be taught or suggested by the prior art. "Obviousness requires a suggestion of all limitations in a claim." CFMT, Inc. V. Yieldup International Corp., 349 F.3d 1333, 1342, 68 USPQ2d 1940, 1947 (Fed Cir. 2003) citing In re Royka, 290 F.2d 981, 985 (CCPA 1974).

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### SUMMARY

At issue are claims 16 through 20 and claims 30 through 33 and claims 45 through 49. All other claims have either been cancelled or withdrawn.

The claims have been rejected under 35 U.S.C. 103(a) relying upon Kamiyama in combination with other references.

However each claim includes the step of injecting chemical reactants from the ground surface. This is not suggested, motivated or taught by any reference cited by the Examiner. It is the Applicant's position that the §103(a) rejections are now moot and the claims are now allowable. Such action is respectfully requested.

Respectfully submitted,



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